Chapter VI

Chapter VI: Summary, Conclusion, and Policy Recommendations

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6.1 SUMMARY AND CONCLUSION

The present study shows that linear growth and relative weight gain during mid-childhood and adolescence have significant positive effects on education and health capital accumulation. For example, on an average one centimeter(cm) increase in linear growth is expected to increase the schooling by 0.007 to 0.053 years; PPVT score by 0.553 to 0.769 points and math score by 0.042 to 0.048 points. On health human capital measures, one centimeter (cm) increase in linear growth will result in 0.421 to 0.552 kg increase in weight and 0.122 to 0.146 points Z-HFA improvement. Quantile regression results shows that the effect of health (linear growth and weight gain) on human capital (education and health) formation is not similar across the levels of distribution of the human capital measures. The effect of linear growth decreases at higher levels of years of schooling distribution; but increases at higher levels of Math test-score distribution. On health human capital, the effect of linear growth on weight, BMI and Z-HFA decreases from the lowest quantile to the highest quantile of theirs distributions. The effect of linear growth on BMI becomes negative at the highest quantile of the BMI. Whereas, the positive effect of relative weight gain on BMI increases at its higher distribution, and the effect of relative weight gain on Z-BMI score decreases at the higher distribution of Z-BMI score. The negative effect of weight gain on years of schooling and Z-HFA score decreases between the lowest quantile to the highest quantile of their distributions.

We empirically estimate the wage effect of calorie consumption using 2SLS and IVQR models, which takes both heterogeneity and endogeneity into account. The IV regression estimated at the mean of the wage distribution confound the heterogeneity in the calorie-wage association. The decline in calorie-wage elasticity at the higher levels of wage
distribution implies that nutrition intervention at lower levels of income and calorie
distribution will attain maximum wage gain. Other studies have also found that in low
income settings, such as, elementary occupation based households, increase in nutrition
status in terms of calorie intake has positive effect on income but at a decreasing rate (Anil
B. Deolalikar, 1988; J. Strauss, 1986; John Strauss & Thomas, 1998). Among the non-
elementary workers regression coefficient at the 10th quantile is 0.412 compared to 0.421
at the median and 0.314 at the 90th quantile of the wage distribution. This implies that,
same amount of food supplementation among the non-elementary workers at the 10th wage
quantile will result in more wage gain compared to the wage gain at the median or 90th
quantile.

Health gradient in income shows that a 10% increase in adult survival probability will
increases the level of national income by 8% to 11.8%. Whereas, adult survival probability
growth gradient elasticity of economic growth shows that a 10% increase in the growth of
adult survival probability has the potential to increase the economic growth rate by about 7
to 26.23%.

Results also show that a 10% decrease in health inequality when measured in terms
inequality in under-five child mortality results in a 0.8-1.6% increase in economic output
or income. Our results also indicate that a 10 per cent decline in the growth of inequality in
under-five child mortality can increase the economic growth by about 0.7% in India. The
results hold whether we control for fixed or random-effects or whether health inequality is
adjusted for endogeneity. Our main results also survive the test for sensitivity and
robustness as the nature of results do not change when we use Gini of per capita calorie
intake as an alternative measure of health inequality. Our findings are consistent with those
in existing literature on the effects of inequality in health on economic growth. Like
Grimm (2011), D Thomas and Strauss (1997) and Anil B. Deolalikar (1988), who either show a negative effect of inequality in health on productivity/economic growth or a positive effect of better health on productivity.

The results clearly bring about the importance of improvement in health for achieving economic growth in a developing country setting like India. The poor health infrastructure in India can be seen as a major hindrance in the process of achieving economic growth. Also, public health expenditure in India has been declining and has reduced from 1.3% of GDP in 1990 to 0.9% in 1999 and further to 0.7% in 2009 (Bhandari et al., 2010; MOHFW, 2009; RBI, 2013). Also, the decline is mainly on account of the decline in government health spending at the state level (Berman et al. 2010). In addition, there are striking regional inequalities in population health and provision of health services in the country. Besides, population stabilization is still a challenge in the country, especially in states with weak demographic indicators.

As mentioned in earlier literature and evidence from our quantile regressions’ findings indicate that the public health and nutritional intervention has varying effect on the distribution of health and education human capital. So, on which point or end of the health and education distribution, a welfare program/policy to improve health and education capital in a society is focused has the potential to affect the outcome of the policy or program. Given the low school enrolment and rampant malnutrition, about 20% (25 million) of under-five children are wasted, 43% (54 million) are underweight and 48% (61 million) are stunted in India (UNICEF, 2011). And, given the fixed amount of resources, study findings indicate that mid-childhood nutritional intervention targeting severely stunted or underweight children has the potential to attain maximum gain in human capital accumulation.
In the context of the contemporary food security program of India, the study establishes that the positive discrimination in the favor of the poorest of the poor will result in maximum gain in income and social welfare given the limited economic resources. However, consistent decline in per capita calorie intake in the last three decades makes the universal food security an important initiative in India.

Clearly, if India has to accelerate economic growth, then the policy makers have to address the poor health infrastructure and services in the country, which they are attempting to some extent but still a lot more needs to be done and formulate policies, which can stimulate the demand and supply of health facilities. Hence, the launch of National Rural Health Mission is a step in right direction. Indirectly through human capital formation, health improvement will address the demand and supply constraint of the income generation and economic growth in India.

Our findings are important if seen in the light of widespread socioeconomic inequality in health in India. According to some views (Balarajan et al., 2011), India suffers from massive inequalities in health related to socioeconomic status, geography and gender, which get compounded by high out-of-pocket expenditure. Health care expenditure increases poverty, with about 39 million additional people falling into poverty every year as a result of such expenditure. There are key challenges, such as, an imbalance in resource allocation, inadequate physical access to high-quality health services and human resources for health, high out-of-pocket health expenditure, inflation in health spending, and behavioral factors that affect the demand for appropriate health care, for the achievement of equity in service provision, and equity in financing and financial risk protection (Balarajan et al., 2011). Also, health services in India favour the non-poor: for every ₹1 spent on curative health services on the poorest 20 per cent population, ₹3 is spent on the
richest quintile; and only 10 per cent Indians have some form of health insurance, mostly inadequate for utilization of health services (MOHFW, 2009).

6.2. POLICY RECOMMENDATIONS

1) Investment in improving nutrition in childhood will go a long way to physical growth, cognition development, and educational attainment hence labor productivity in adulthood thereby contributing to higher personal income and economic growth of India.

2) Interventions in health along with education, with priority to reduce inequality at the earliest would pay high dividend not only in terms of increasing the income at individual level but also contribute to national income and economic growth by improving labour productivity.

6.3. LIMITATION

Adult survival probability does not capture overall health and productivity of a population. There may be low productivity in the early age due to poor child nutrition, but life expectancy may be high because of access to medical care in the later or old age. In such case, adult survival probability based income and economic growth will be overestimated.

Health inequality measured by the absolute difference between under-five mortality rate among the children born to illiterate mothers and children born to mothers who have at least completed primary school from the pooled birth history of the three rounds of NFHS may not be true population representative. However, here under-five mortality estimation by mother’s education is not aimed to give the time-series estimates of health inequality, but the near level of health inequality. Hence, mother’s education and under five mortality
based health inequality may adequately captures the socioeconomic gradient in health over time.